

CLAIMS

1. A method of manufacturing a semiconductor device, by use of a perforating process including providing a mask
5 having an opening on a semiconductor substrate, and forming plural types of through-holes different in width dimension in said semiconductor substrate, wherein a removal rate of a semiconductor material in the depth direction of said semiconductor substrate becomes higher as said opening has
10 a wider opening width, said method comprising:

a first step of forming a concave portion in a first surface of a semiconductor substrate, in a first region of said semiconductor substrate corresponding to the opening of said mask having a relatively narrow opening
15 width, to allow said first region to have a thickness dimension less than that of a second, remaining, region of said semiconductor substrate; and

a second step of performing said perforating process using said mask provided on a second, opposite,
20 surface of said semiconductor substrate, to form a first through-hole reaching said first surface in said second region of said semiconductor substrate and a second through-hole reaching said concave portion.

2. The method according to claim 1, which includes
25 joining said first surface of said semiconductor substrate

to a support substrate after said first step, and then performing said second step.

3. A method of manufacturing a semiconductor device, by use of a perforating process including providing a mask
5 having an opening on a semiconductor substrate, and forming plural types of through-holes different in width dimension in said semiconductor substrate, wherein a removal rate of a semiconductor material in the depth direction of said semiconductor substrate becomes higher as said opening has
10 a wider opening width, said method comprising:

a first step of performing said perforating process using said mask provided on a first surface of a semiconductor substrate until a first through-hole having a relatively wide width dimension reaches a second, opposite,
15 surface of said semiconductor substrate; and

a second step of forming a concave portion in said second surface of said semiconductor substrate, in a region of said semiconductor substrate corresponding to the opening of said mask having a relatively narrow opening
20 width, to allow a second through-hole having a relatively narrow width dimension to penetrate to a bottom surface of said concave portion.